

U. S. PTO Customer No. 25280

Case #5802

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REMARKS

35 USC Section 103 Rejections:

2. Claims 1 – 6, 12 – 18, 22 – 23, 28, 30, 32, 34 – 35 and 37 were rejected under 35 USC 103(a) as being unpatentable over Nun et al. (US 2003/0147932) in view of Morgan et al. (US 2003/0096083).

The Examiner states that Nun et al. teach a self-cleaning surface for an article that has a "lotus effect" surface (Abstract) which provides a hydrophobic surface [0003]. The Examiner further states that the applied article taught by Nun's invention may comprise polyurethane fibers [0041]. The hydrophobic surface of the applied article, in this case polyurethane fibers, is created from a plurality of irregularities, such as elevations and/or depressions [0029]. The Examiner also states that Nun teaches that to create these elevations, particles ranging in diameter from 20nm to 100 microns [0035] may be affixed to the surface of the polyurethane fibers [0043]. The particulate may be silica, including fumed silica [0038]. The Examiner also takes the position that the applied reference also encompasses colloidal silica. The Examiner submits that Nun is silent as to the creation of integral surface structures on the surface of the fabric to create the "lotus effect."

The Examiner states that Morgan et al. teach a method of creating extremely hydrophobic surfaces that consist of elevations and indentations and that have a hydrophobic layer on their exterior (Abstract). The elevations and indentations may be created via subtractive processes such as fine blasting, embossing, or etching [0027]. The elevations and indentations of the surface have a size in the range of 10nm to 200 microns [0026]. The Examiner takes the position that the elevations and indentations are normal to the plane of the surface of the treated substrate as the outward facing surface is treated via process such as fine blasting, embossing or etching which would result in elevations and indentations normal to the surface of the treated substrate. The invention of Morgan et al. is designed to treat the entire outwardly facing surface that would encounter liquid (Abstract). A second step for production of the hydrophobic surface consists of applying a contour-following coating (repellent) that may serve as corrosion protection or a sealing effect [0031]. This coating serves as a separate repellent layer upon which the nanoparticles of Nun et al. would be attached in the combined article.

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The Examiner submits that since Nun et al. and Moran et al. are from the same field of endeavor (i.e. super hydrophobic articles), the purpose disclosed by Morgan et al. would have been recognized in the pertinent art of Nun et al. Thus, the Examiner believes it would have been obvious at the time the invention was made to a person having ordinary skill in the art to modify the article of Nun et al. with the surface modification (i.e. elevations and indentations and coating) of Morgan et al. Thus the skilled artisan would have been motivated by the desire to impart the outer surface of the polyester fabric with greater hydrophobicity. The Examiner also contends that although Morgan et al. do not explicitly teach the claimed feature of a Roughness Factor greater than or equal to about 1.30, it is reasonable to presume that said property is inherent to Morgan et al. Support for said presumption is found in the use of like materials (i.e. polyester fibers with microscopic surface structures). The burden is upon Applicant to prove otherwise. In addition, the Examiner submits that the presently claimed property of a Roughness Factor greater than or equal to 1.30 would obviously have been present once the Morgan et al. product is provided.

To establish *prima facie* obviousness of a claimed invention, the proposed modification cannot render the prior art unsatisfactory for its intended use (MPEP § 2143.01; *In re Gordon* 733 F.2d 900, 221 USPQ 1125 Fed. Cir.1984). Applicants respectfully continue to submit that the combination of references suggested by the Examiner would destroy the intended function of at least one of the references.

Nun teaches the application of antimicrobial particles to surfaces, wherein the antimicrobial particles have hydrophilic properties [0039]. Nun further teaches that hydrophobic particles may also be added to surfaces [0034]. Nun further states that "the antimicrobial particles must not be hydrophobicized, since the antimicrobial property is lost when a hydrophobicizing reagent covers the surface" [0055]. Morgan teaches a method of creating extremely hydrophobic surfaces that consist of elevations and indentations and that have a hydrophobic layer on their exterior (Abstract).

Applicants respectfully submit that it is quite evident that the teaching by Nun of hydrophilic particles would be in direct contradiction to the teachings of Morgan, wherein Morgan desires to create an extremely hydrophobic surface. Thus, Applicants respectfully contend the combination of Nun and Morgan, as proposed by the Examiner, would destroy the intended function of Nun. More specifically, since Morgan teaches only the creation of extremely hydrophobic surfaces and Nun teaches that "the antimicrobial particles must not be hydrophobicized," such a combination would

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destroy the intended function taught by Nun of providing surfaces having antimicrobial properties wherein the antimicrobial property is provided solely by hydrophilic particles. Furthermore, Applicants respectfully contend that the Examiner cannot pick and choose from the teachings of the combination of references, but rather should take the teachings contained therein as a whole in rejecting the present claims. Upon doing so, Applicants respectfully submit that the teachings of Nun would certainly destroy the intended function of Morgan.

Additionally, Applicants respectfully submit that Nun and Morgan are not from the same field of endeavor. More specifically, Nun is directed to creating antimicrobial self-cleaning surfaces which are comprised of hydrophobic and antimicrobial particles (Abstract). The surfaces of Nun include molded articles made from polymers [0041]. In contrast, Morgan is directed to creating extremely hydrophobic surfaces which can be configured into articles such as containers for receiving liquids. Containers such as those designed for holding food are disclosed by Morgan (Abstract). Thus, on one hand Nun is directed to self-cleaning, antimicrobial surfaces, while Morgan is directed to super hydrophobic surfaces. Accordingly, Applicants respectfully submit that the combination of references are not from the same field of endeavor.

As such, Applicants respectfully submit that a *prima facie* case of obviousness has not been established. Reconsideration and withdrawal of this rejection is earnestly requested.

3. Claims 10 – 11, 19 – 21, 24 – 27, 29, 31, 33, 36 and 38 – 39 were rejected under 35 USC 103(a) as being unpatentable over Nun et al. (US 2003/0147932) in view of Morgan et al. (US 2003/0096083) and further in view of Soane et al. (USPN 6,607,994).

The Examiner submits that Soane et al. teach a permanent treatment of textiles and other webs that includes the chemical covalent bonding of a payload of nanoparticle on the surface of a fiber, yarn, fabric, etc. (Abstract). The term "textile" encompasses woven, nonwoven, and knitted substrates (col. 2, lines 45-48). The Examiner takes the position that the intent of Sloane et al. is to encompass all textiles, which includes scrims. The "payload" may be attached to the textile via crosslinked polyurethane polymer (col. 6, lines 25-38). The Examiner further submits that since Soane et al. and Nun et al. are from the same field of endeavor (i.e. permanently modified textiles via the attachment of nanoparticles), the purpose disclosed by Soane et al. would have been recognized in the pertinent art of Nun et al.

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Thus, the Examiner submits that it would have been obvious at the time the invention was made to a person having ordinary skill in the art to have made the article of Nun et al. with textile substrates of Soane et al. and attach the nanoparticles via crosslinked polyurethane motivated by the desire to use "smart polymers" that react to the environmental surroundings (col. 6, lines 15-28) and create a treated textile for use in a wide variety of applications.

Applicants respectfully disagree with the basis of this rejection and rely on the discussion presented above (see pages 3-4 above) with regard to the impropriety of the combination of Nun et al. and Morgan et al. Soane et al. teach encapsulated nanoparticles which may be attached to the surface of a textile substrate (Abstract) and that the polymers used in forming the nanoparticles may be either hydrophobic or hydrophilic (col. 3, line 46 to col. 4, line 54).

Since Applicants have already concluded that the combination of Nun and Morgan is improper, and since Soane fails to provide for the deficiencies of Nun and Morgan, Applicants respectfully submit that this rejection is improper. Reconsideration and withdrawal is earnestly requested.

4. Claims 7 – 9 and 40 – 45 were rejected under 35 USC 103(a) as being unpatentable over Nun et al. (US 2003/0147932) in view of Morgan et al. (US 2003/0096083) and further in view of Yamamoto et al. (US 2004/0202818).

The Examiner submits that Yamamoto et al. teach a method of creating a water and oil-repellent article by treating said article with at least one fluorine-containing compound (Abstract). Fluorine polymers available for application include a fluoroalkyl group-containing (meth)acrylate [0035]. The Examiner further contends that since Nun et al. and Yamamoto et al. are from the same field of endeavor (i.e. hydrophobic articles), the purpose disclosed by Yamamoto et al. would have been recognized in the pertinent art of Nun et al.

Thus, the Examiner submits that it would have been obvious at the time the invention was made to a person having ordinary skill in the art to have coated the article of Nun et al. with a fluoroalkyl group-containing (meth)acrylate motivated by the desire to make the article more hydrophobic.

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Applicants respectfully disagree with the basis of this rejection and rely on the discussion presented above (see pages 3-4 above) with regard to the impropriety of the combination of Nun et al. and Morgan et al. Yamamoto et al. is directed to compositions and methods for imparting oil and water repellent properties to a textile substrate (Abstract).

Since Applicants have already concluded that the combination of Nun and Morgan is improper, and since Yamamoto fails to provide for the deficiencies of Nun and Morgan, Applicants respectfully submit that this rejection is improper. Reconsideration and withdrawal is earnestly requested.

Conclusion:

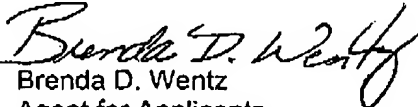
For the reasons set forth above, it is respectfully submitted that all claims stand in condition for allowance.

Should any issues remain after consideration of these Remarks, the Examiner is invited and encouraged to telephone the undersigned in the hope that any such issue may be promptly and satisfactorily resolved.

In the event that there are additional fees associated with the submission of these papers (including extension of time fees), authorization is hereby provided to withdraw such fees from Deposit Account No. 04-0500.

Respectfully requested,

February 26, 2007


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